Title: Space Symmetry

Link to Outcomes:

- **Problem Solving** Students will develop and apply strategies to solve a wide variety of problems.
- **Communication** Students will realize that representing, discussing, reading, writing, and listening to mathematics are a vital part of learning and using mathematics.
- **Reasoning** Students will use patterns and relationships to analyze mathematical situations.
- **Connections** Students will relate various representations of concepts or procedures to one another.
- **Geometry And Spatial Sense** Students will develop spatial sense.

Brief Overview:

The students will construct a symmetrical picture using geoboards and pattern blocks after listening to the story Space Case.

Grade/Level:

Grade 3

Duration/Length:

One to two class sessions should be allocated for this lesson.

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

- Names of polygons: pentagon, hexagon, heptagon, octagon, nonagon, and decagon
- Characteristics of polygons
- Line segments
- Vertex of an angle
- Identify lines of symmetry

Objectives:

- Students will identify symmetrical figures.
- Students will construct lines of symmetry for plane figures.
- Students will distinguish between similar and congruent plane figures.

Materials/Resources/Printed Materials:

- Space Case by Edward Marshall
- Thirty geoboards and rubber bands
- Two buckets of pattern blocks
- Crayons / Pencils

Development/Procedures:

- Ask the students to share their symmetrical pictures that they created using the software program *MicroWorlds Project Builder* during the previous day's lesson. Remind students of the definition of symmetry.
- Read the book Space Case to the class for enjoyment.
- Distribute the geoboards and rubber bands to all students.
- Reread the text having the students use the geoboards to create a space character using polygons. Pause occasionally during the rereading of the text to have students share their geoboard space characters.
- Ask all the students to place their geoboards on the chalk ledge to display their space characters.
- Distribute pattern blocks to each table. Ask the students to create a similar space character using the pattern blocks. Encourage the students to use no more than 14 blocks. Remind the students that their space characters need to be symmetrical.
- Ask the students to record their space characters in their math journals by tracing the pattern blocks. Allow time for students to color their space characters.
- When students have finished their space characters, ask the students to trade math journals to identify a line or lines of symmetry in the partner's picture. Allow time to share the lines of symmetry and space characters.

Evaluation:

Observe the students constructing their geoboard space characters.
Ask the students to draw the line of symmetry on their own space characters in their math journals.

Extension/Follow Up:

Ask the students to make symmetrical butterfly pictures at the math center. Provide the students with precut butterflies, markers, and crayons. Encourage the students to write a paragraph describing their butterfly and identifying the line of symmetry.

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